SP-T8 Project Effects on Non-Native Wildlife

October 25, 2002

1.0 Introduction/Background

The California Wildlife Habitat Relationships Program identifies 14 non-native vertebrate wildlife species as having potential to occur within the project area, including, including six birds, seven mammals, and one amphibian (Table 1).

Table 1. List of Non-Native Vertebrate Wildlife Species Potentially Found within the Project Area

Common Name	Scientific Name	Status
Bullfrog	Rana catesbeiana	DFG Harvest
House sparrow	*Passer domesticus*	
Bobwhite quail	*Colinus virginianus*	DFG Harvest
Ring-necked pheasant	*Phasianus colchicus*	DFG Harvest
Wild turkey	*Meleagris gallopavo*	DFG Harvest
Rock dove	*Columba livia*	
European starling	*Sturnus vulgaris*	
Virginia opossum	*Didelphis virginiana*	DFG Harvest
Black rat	*Rattus rattus*	
Norway rat	*Rattus norvegicus*	
House mouse	*Mus musculus*	
Muskrat	*Ondatra zibethicus*	DFG Harvest
Red fox	*Vulpes vulpes*	
Feral pig	*Sus scrofa*	DFG Harvest

Several of these species were introduced by the California Department of Fish and Game as harvest species or are currently managed as harvest species (Table 1). All of these species compete with, displace, or prey upon native wildlife to a certain extent.

House sparrows were first introduced from Europe into the eastern United States around 1850 and rapidly spread across the country arriving in California at San Francisco in the early 1870s (Ziener et. al 1990). Preferred habitats include urban and croplands (primarily grain crops). This species occurs throughout the project area near human habitation or livestock with highest densities frequently near outdoor restaurants, stables, and other human developments.
House sparrows are aggressive nesters and frequently displace native avian species by evicting nesting adults or destroying nests. This species primarily impacts secondary cavity nesting species including swallows, western bluebird, house wren, and house finch.

Rock doves or domestic pigeons were also introduced from Europe. This species was probably introduced into the United States prior to 1800 as a food source. Preferred habitats includes perennial and annual grasslands as well as croplands, pasture, and urban. Rock doves nest within sheltered locations in variety of human-related structures including bridges and buildings (Harrison 1978). This species may compete with

native species for food resources including waste grains, seeds, and human food scraps. Rock doves are preyed upon by several native species including peregrine falcon and several species of carnivorous furbearers.

European starlings were introduced into the United States from Europe and are currently an abundant species within the project area and nearby agricultural habitats. Preferred habitats include urban, cropland, pasture, and orchard/vineyard. They feed on insects, grains, garbage, fruits, nuts and seeds. This species can form large wintering flocks capable of inflicting damage to crops. Starlings (like house sparrows) are aggressive competitors for cavity nest sites. They will use almost any cavity greater than 1.5 inches diameter in buildings, nest boxes or trees (Bent 1950). They successfully displace wrens, nuthatches, swallows, titmouse, bluebirds, kestrels, acorn woodpeckers and wood ducks (Small 1974, Kessel 1957, Troetschler 1976, and Grabill 1977).

Black rats were introduced from Europe in the early 1800s and are relatively common in urban areas in California's Central Valley. In Northern California this arboreal species also occurs in riparian habitat, and Himalayaberry thickets (Ingles 1965, Dutson 1973). The introduced Norway rat and muskrat are this species closest competitor. Black rats carry a variety of diseases, which can affect humans including bubonic plague, rabies, typhus, tularemia, and trichinosis (Zeiner et. al 1990).

Norway rats were introduced from Europe and occur within the valley portions of the project area. Norway rats occur in both urban, agricultural, and native plant communities including wetlands and riparian habitats. Highest densities occur in dumps and grain croplands. Norway rats are omnivorous and prey upon native birds, eggs, and small mammals in addition to fruits, seeds, and garbage. Hawks, owls, foxes, weasels and snakes prey upon Norway rats. Like black rats, this species carries a variety of diseases including salmonellosis, tularemia, leptospiral jaundice, Haverhill fever, and typhus fever (Godin 1977).

House mice were also introduced from Europe and are common in the project area near human habitation. This species is less common in native plant communities but does occur in grassland, forest, and shrub habitats near urban habitats. Native harvest mice and microtus (voles) dominate this introduced species. Most carnivorous furbearers as well as hawks, owl, voles, snakes and rats prey on house mice. Like the other introduced rodents, which have evolved in close association with humans, this species can carry and transmit viral and bacterial diseases to humans.

Two subspecies of red fox occur in California. Native red foxes are restricted to higher elevation with most sightings ranging from 3,900 feet to 11,900 feet elevation (Schempf and White 1977). The introduced subspecies generally occurs at elevation less than 3,000 feet elevation (Schempf and White 1977). Original introduction of the non-native subspecies was probably related to hound hunting or fur farming.
Red foxes within the project area are the non-native subspecies and use annual grasslands, perennial grasslands, emergent wetland and cropland habitats. They feed primarily on small mammals but are believed to be an increasingly important predator of nesting waterfowl, shorebirds, and upland game birds as its range and density continue to expand within California's Central Valley (Zeiner et. al 1990). Non-native red fox appears to coexist with native canids including coyote, gray fox, and kit fox.

Bull frogs are native to the eastern United States, and where introduced to California early in early 1900s. Bull frogs are now common and wide spread throughout the low elevation marsh, riparian, and other wetland habitats. Adult bullfrogs are opportunistic feeders taking both aquatic and terrestrial prey, including native frogs, snakes, salamanders, toads, and turtles. Bullfrog populations have been linked with the decline of native species associated with emergent wetland habitats.

Bobwhite quail have been introduced to California for hunting. Bobwhite quail have been designated as a "harvest species" by the CDFG and hunted within the project boundary. The effect of bobwhite quail on native wildlife species has not been determined.

The ring-necked pheasant was introduced from Eurasia for sport hunting. The ring-neck pheasant has been designated as a "harvest species." Captive raised pheasants continue to be released throughout California by hunters, and hunt clubs. This ground nesting bird is common in grain fields and open grasslands. The effect of ring-neck pheasant populations on native wildlife species has not been determined.

Wild turkeys were introduced to California in 1877. The range of wild turkey populations continues to expand in hilly oak woodland habitat. Wild turkeys nest from March to August. Wild turkeys have been designated as a "harvest" species by the CDFG. Turkey hunting takes place at several locations within the project boundary, including the Oroville Wildlife Area. The effect of wild turkey populations on native wildlife species has not been determined.

The Virginia opossum is common to abundant in woodland and bush habitats throughout California. Opossums have been designated a "harvest species," and were introduced to California in 1910 from the American Southeast. Since 1910, the range of the opossum has expanded to include most of California from the crest of the Sierras to the Pacific Ocean. The effect of opossum populations on native wildlife species has not been determined.

The muskrat occurs in emergent wetland habitats and riparian habitats with herbaceous cover. Muskrats have been introduced to California for fur production, and are currently classified by CDFG as a "harvest species." Burrowing activities can result in extensive damage to levees and ditches. The effect of muskrat populations on native wildlife species has not been determined.

Feral pigs have been widely introduced throughout California by accident escape and introductions for sport hunting. This species has been classified as a "harvest species" by CDFG. Feral pigs have become year-round residents of oak woodland, grassland, riparian, and conifer habitats. Acorns are an important component of their diet, but foraging for bulbs, insects, roots, and other herbaceous material causes extensive damage. The effect of feral pig populations on native wildlife species has not been determined.

2.0 Study Objectives

Identify potential changes in project operations, land use, features, and management practices which could serve to reduce the potential impact of these non-native wildlife species on native species and their habitats.

3.0 Relationship to Relicensing/Need for the Study

Relicensing participants have identified project effects including land management, project facilities, and operation on non-native wildlife as a relicensing issue. Non-native wildlife species can adversely impact native wildlife (including State and federal special status species) through competition, predation, and disease. Further, several of the non-native species have evolved in close association with humans and carry or transmit disease to humans. NEPA requires assessment of public health impacts. Many of the currently developed recreation facilities contain features or activities that are attractive to these non-native species.

4.0 Study Area

Within the project boundary many of the non-native species identified in the Introduction have relatively small home ranges and prefer urban or agricultural habitats. Study plans approved by the Environmental Work Group define the limits of the study area. If initial study results indicate that the study area should be expanded or contracted, the Environmental Work Group will discuss the basis for change and revise the study area as appropriate.

5.0 General Approach

If initial study results indicate that the methods and tasks should be modified, the Environmental Work Group will discuss the basis for change and revise the study plan as appropriate.

Task 1

Review scientific literature related to species biology, habitat requirements, and life history requirements of the fourteen selected non-native wildlife species.

Task 2

Using the information reviewed and collected under Task 1, conduct an evaluation, which identifies general management guidelines within the study area, which serve to limit the occurrence of these fourteen selected non-native wildlife species.

Identify potential management practices that could be incorporated into the Wildlife Management Plan if it is determined that a problem with these non-native wildlife species exists or could exist during the term of a new license.

Task 3

Provide a qualitative assessment on the population and distribution of the wildlife species identified in Table 1. This data will be collected in coordination with SP-T1, SP-T2, and SP-T9.

6.0 Results and Products/Deliverables

Study results in the form of general management guidelines will be identified so that they can be incorporated into the Wildlife Management Plan.

7.0 Coordination and Implementation Strategy

Coordination with Other Resource Areas/Studies

This study will be conducted concurrently with other terrestrial resource studies. Results from this study may be incorporated into other terrestrial resource studies including SP-T2 (Special Status Species) and SP-T7 (Noxious Plants). Study results will be incorporated into Wildlife Management Plan (SP-T6) for submittal to FERC.

Issues, Concerns, Comments Tracking, and/or Regulatory Compliance Requirements

This study will evaluate project effects on undesirable non-native wildlife species. This study fully or partially addresses the following Stakeholder issues:

8.0 Study Schedule

Task 1 literature review completed by August 2002. Task 2desktop analyses completed by April 2004. Task 3 qualitative assessments completed by March 2004.

9.0 References

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